WHAT IS CLAIMED IS:

1. A method for determining yield loss of process steps for semiconductor wafers having a plurality of dies, the method comprising:

inspecting the dies of the semiconductor wafers to determine a defect type and a defect count for each the defect type;

electrical testing the dies of the semiconductor wafers to determine a fail die and a pass die, wherein each the fail die having a single defect or a plurality of defects is indicated a hit;

determining a defect calibrated factor for eliminating defect count excursions in a yield control table for the semiconductor wafers, wherein the defect calibrated factor is based on a difference between a ratio of the hits to a quantity of the dies with defects and a ratio of a quantity of the fail dies without defects to a quantity of the pass dies without defects;

weighting a hit ratio with a function of the defect counts of the defect type, wherein the hit ratio is ratio of the hits of the defect type to the defect counts of the defect type;

determining a yield impact contribution for each of the defect types, wherein the defect impact contribution is based on a calibrated ratio of the weighted hit ratio for each of the defect types to a sum of the weighted hit ratio for all of the defect types;

determining a kill ratio for each of the defect types, wherein the kill ratio is based on a yield impact calibrated factor for the defect types, a total quantity of the defect counts, an average defect density of the defect types, and a die area; and

determining a yield loss for each of the defect types, wherein the yield loss is based on the kill ratio for the defect type, the average defect density of the defect type, the die area, and the yield impact calibrated factor.

2. The method as recited in claim 1, wherein the step of determining the defect calibrated factor is computed using a normalizing formula:

$$\alpha = \left[1 - \frac{a/b}{c/d}\right] \cdot \frac{b}{b-a}$$

where a is a quantity of the pass dies with defects, b is a quantity of total dies with defects, c is a quantity of the pass dies without defects, and d is a quantity of total die counts without defects.

3. The method as recited in claim 1, wherein the step of determining the yield impact contribution comprises:

initializing the yield impact contribution to zero;

modifying the yield impact contribution by the steps of:

weighting the hit ratio for each of the defect type with the defect counts of the defect type;

calculating a ratio of the weighted hit ratio of the defect type to a sum of the weighted hit ratio for the defect types, adding the ratio to a previous yield impact contribution, the previous yield impact contribution being obtained at a previous fail die; and

repeating the step of modifying until all dies have been considered; and

calibrating the yield impact contribution by multiplying by the defect calibrated factor.

4. The method as recited in claim 3, wherein the step of determining the yield impact contribution is performed using formulae:

$$Kc_{ij} = Kc_{ij-1} + \frac{hr_i \cdot n_{ij}}{\sum_k \left(hr_k \cdot n_{kj}\right)} \cdot \varphi_j \qquad \text{EQ. 1}$$

$$Kc_i = Kc_{ij} \cdot \alpha \qquad \text{EQ. 2}$$

where Kc_i is the yield impact contribution of a specific defect i, j is die index, k is defect type index, α is the defect calibrated factor, hr_k is the hit ratio for the defect type k, n_{kj} is the defect counts of the defect type k on die j, and φ_j is die impact factor of die j, said factor is assigned to 0 for the pass die and is assigned to 1 for the fail die.

5. The method as recited in claim 1, wherein the step of determining the yield impact contribution comprises:

determining the hit ratio for each of the defect types upon die-based defect-review-sampling method, wherein the die-based defect-review-sampling method restricts a single first found defect on each die; and

determining the yield impact contribution for the defect type by calculating a ratio of the hit ratio weighted by a percentage of the defect counts out of the total defect counts to a sum of the hit ratio weighted by a percentage of the defect counts out of the total defect counts for each the defect type, and weight the ratio with a quantity of the fail dies.

6. The method as recited in claim 5, wherein the step of determining the yield impact contribution is performed using formulae:

$$Kc_i = K'c_i \cdot \alpha \qquad \text{EQ. 3}$$

$$K'c_i = \frac{hr_i \cdot \omega_i}{\sum_k \left(hr_k \cdot \omega_k\right)} \cdot n_f \qquad \text{EQ. 4}$$

where Kc_i is the yield impact contribution of the defect type i, k is defect index, n_f is the quantity of fail die count, hr_k is the hit ratio of the defect k, and ω_k is the percentage of the quantity of the defect k out of all defect counts upon die-based defect-review-sampling, and α is the defect contribution calibrated factor .

7. The method as recited in claim 1, wherein the yield impact calibrated factor for each of the defect types is calculated using a formula:

$$\beta_i = \frac{f(D_{i0})}{D_{i0}A}$$

where i is defect type index, D_{i0} is the average defect density of the defect type i, $f(D_{i0})$ is defect density distribution function of the defect type i, and A is a die area.

8. The method as recited in claim 1, wherein the kill ratio for each of the defect types is calculated using a formula:

$$Kr_{i0} = \frac{Kc_i}{(ND_{i0}A)\beta_i} \qquad \text{EQ. 5}$$

where Kr_{i0} is an average of the kill ratio of the defect type i, Kc_i is the yield impact contribution of the defect type i, N is total die counts, D_{i0} is the average of defect density of the defect type i, A is the die area, and β_i is the yield impact calibrated factor for the defect type i.

9. The method as recited in claim 1, wherein the step of determining the yield loss for each of the defect types based on the average kill ratio and a total of dies counts includes calculating the yield loss by dividing the kill ratio for a given defect inspection process by the total die counts of the semiconductor wafer, wherein said calculation is performed using the formula:

$$Y_i = Kr_{i0} \cdot [(D_{i0}A)\beta_i] \qquad \text{EQ. 6}$$

where Kr_{i0} is the average kill ratio of defect type i, D_{i0} is the average defect density of the defect type i, A is the die area, and β_i is the yield impact contribution calibrated factor.

10. The method as recited in claim 1, wherein the yield loss for the defect type is expressed as a ratio of the yield impact contribution for the defect type to the total quantity of the die counts.